Date
Page 01

MCQ based on Unit -3 and 4

(1) The notation for a conjuction is

(a) $p \Rightarrow q$ (b) $p \wedge q$ (c) $p \vee q$ (d) $\sim p$

(2) Which of the following is not logical connectives?

(a) and (b) or (c) if...then (d) statement

(3) The truth value of a statmnt is denoted by T if

(a) the stmt. is true (b) the stmt. is false (c) the stmt. is simple (d) None of these

(4) A stmt. involving only one statement is called

(a) componnd statement (b) Compusite statmnt (c) both (a) and (b) (d) simple statement

(5) Which of the following notation is always false

(a) t (b) c (d) p (d) $\sim p$

(6) $p \vee t =$ _____

(a) p (b) t (c) c (d) $\sim p$

(7) $p \wedge t =$ _____

(a) p (b) t (c) c (d) $\sim p$

(8) $p \vee (\sim p) =$ _____

(a) p (b) t (c) c (d) $\sim p$

(9) $p \vee c =$ _____

(a) p (b) t (c) c (d) $\sim p$

(10) $p \wedge c =$ _____
(a) p (b) t (c) c (d) $\sim p$

(11) $p \wedge (\sim p) =$ _____
(a) p (b) t (c) c (d) $\sim p$

(12) $\sim(p \vee q) =$ _____
(a) $(\sim p) \vee (\sim q)$ (b) $(\sim p) \wedge (\sim q)$ (c) $p \wedge q$ (d) $q \wedge p$

(13) $p \wedge (p \vee q) =$ _____
(a) q (b) t (c) c (d) p

(14) $p \wedge (q \vee r) =$
(a) $(p \wedge q) \vee r$ (b) $(p \wedge r) \vee q$
(c) $(p \wedge q) \vee (p \wedge r)$ (d) $(p \vee q) \wedge (p \vee r)$

(15) The truth value for $p \Rightarrow q$ is false if p is _____ and q is _____
(a) true, false (b) false, true
(c) true, true (d) false, false

(16) The truth value for $p \Leftrightarrow q$ is true if p is _____ and q is _____
(a) true, true (b) false, false
(c) Both (a) and (b) (d) None of these

(17) Which of the following is a statement?
(a) May you live long (b) Where are you going?
(c) For real number x, $x^2 \geq 0$ (d) None of the above

(18) The negation of "$\forall x \in A, x \in B$" is
(a) $\exists x \in A, x \in B$ (b) $\exists x \in A, x \notin B$
(c) $\forall x \notin A, x \notin B$ (d) $\forall x \in A, x \notin B$

(19) In $p \to q$ statement p is _____ and q is _____
(a) necessary, necessary (b) sufficient, sufficient
(c) necessary, sufficient (d) sufficient, necessary

(20) $p \to q$ = _____
(a) $(\sim p) \vee q$ (b) $(\sim q) \to (\sim p)$
(c) Both (a) and (b) (d) None of the above

(21) $p \leftrightarrow q$ = _____
(a) $(p \to q) \wedge (q \to p)$ (b) $(q \to p) \wedge (p \to q)$
(c) Both (a) and (b) (d) None of the above

(22) The row in which all hypothesis is true known as
(a) conditional row (b) critical row
(b) simple row (d) None of these

(23) if $(S_1 \wedge S_2 \wedge \dots \wedge S_n) \to S$ is _____ then argument is logically valid.
(a) simple (b) contradiction (c) tautology (d) None

(24) In a boolean algebra, $x + x$ = ___ and $x \cdot x$ = ___
(a) $2x$, x^2 (b) $2x$, $2x$ (c) x, x (d) None

(25) In a boolean algebra, $x + 1$ = _____
(a) 1 (b) x (c) 0 (d) None

(26) In a boolean algebra, $x + (x \cdot y)$ = _____
(a) x (b) y (c) $x + y$ (d) $x \cdot y$

(27) In a boolean algebra, $(x+y)'$ = _____
(a) $x' + y'$ (b) $x' \cdot y'$ (c) both (a) and (b) (d) None

(28) $(x+y)' \cdot (x'+y') =$ _____
(a) $x'+y'$ (b) $x' \cdot y'$ (c) Both (a) and (b) (d) None

(29) $x \cdot y' = 0$ if and only if _____
(a) $x \cdot y = x+y$ (b) $x \cdot y = 1$
(c) $x \cdot y = x$ (d) None of the above

(30) Which of the following is not correct about boolean algebra?
(a) $(x+y)' = x'+y'$ (b) $(x \cdot y)' = x'+y'$
(c) $x \cdot x = x$ (d) $x+x = x$

(31) Which is invalid in a boolean algebra?
(a) $x+x' = x$ (b) $x \cdot x = x$
(c) $x \cdot x' = 0$ (d) $x+x' = 1$

(32) In a boolean algebra, associative laws is
(a) $x+y = y+x$ (b) $(x+y)+z = x+(y+z)$
(c) $x+(y \cdot z) = (x+y) \cdot (x+z)$ (d) All of the above

(33) In a boolean algebra, $x+x' \cdot (x+y)+y \cdot z =$ _____
(a) $x+y$ (b) $x \cdot y$ (c) x (d) y

(34) $(xy'z'+xy'z+xyz+xyz')(x+y) =$ _____
(a) x (b) y (c) x' (d) y'

(35) In a boolean algebra, $(x+y+xy)(x+y) =$ _____
(a) x (b) $x+y$ (c) $x \cdot y$ (d) y

(36) In a boolean algebra, the dual of a true statement is _____
(a) true (b) false (c) either true or false (d) Both (a) and (b)

(37) The dual statement of $x \cdot (y + 0) =$ _____
(a) $x + (y \cdot 0)$ (b) $x' \cdot (y' + 0)$
(c) $x + (y \cdot 1)$ (d) $x' \cdot (y' + 1)$

(38) Value of boolean expression $x_1 + x_2 + (x_1' \cdot x_3)$ for $(1, 1, 1) \in B^3$ is _____
(a) 0 (b) 1 (c) 2 (d) None

(39) The canonical product of sum form of the function $f(x, y) = x \cdot y + x' \cdot y + x' \cdot y'$ is
(a) $x' \cdot y' + x \cdot y' + x \cdot y$ (b) $(x' + y') + (x' + y') + (x + y)$
(c) $(x + y) + (x' + y) + (x' + y')$ (d) $(x' + y') \cdot (x + y') \cdot (x + y)$

(40) Which of the following expression is in the sum of products form?
(a) $(x \cdot y) + (z \cdot w)$ (b) $(x) \cdot y \cdot (z \cdot w)$
(c) $(x + y) \cdot (z + w)$ (d) None

(41) How many 1's are in output of i/o table for the boolean expression $x_1 + x_2$
(a) 0 (b) 1 (c) 2 (d) 3

(42) Determine the values of x, y, z and w that make product term $x' \cdot y \cdot z' \cdot w = 1$
(a) $x = y = z = 0, w = 1$ (b) $x = z = 0, y = w = 1$
(c) $x = y = z = w = 1$ (d) $x = z = 1, y = w = 0$

(43) Complement of $f = (A' + B') \cdot (C + D)$ is
(a) $(A' + B') + (C + D)'$ (b) $A \cdot B + C' \cdot D'$
(c) $(A' \cdot B') \cdot (C' \cdot D')$ (d) $A \cdot B + C \cdot D$

(44) The compound statement _____ is true only when both p and q are true otherwise false.
(a) $p \wedge q$ (b) $p \vee q$ (c) $\sim p \wedge q$ (d) $p \vee (\sim q)$

(45) $\sim(\sim p) = p$ is _____
(a) Negation Law (b) Involution Law (c) Both (a) and (b) (d) None

(46) In the implication $p \Rightarrow q$, p is ____ and q is ____
(a) consequent, antecedent (b) antecedent, consequent
(c) antecedent, antecedent (d) consequent, consequent

(47) "$ab = 0$ if and only if $a = 0$ or $b = 0$" is an example of _____
(a) implication (b) double implication
(c) valid argument (d) all of these

(48) In a boolean algebra $(D_8, +, \cdot, ', 1, 8)$, 1 is _____ and 8 is _____
(a) zero element, unit element
(b) unit element, zero element
(c) zero element, zero element
(d) unit element, unit element.

Roll No.:

Answer key for Unit-3 & 4

1. b
2. d
3. a
4. d
5. c
6. b
7. a
8. b
9. a
10. c
11. c
12. b
13. d
14. e
15. a
16. c
17. c
18. b
19. d
20. c
21. c
22. b
23. c
24. c
25. a
26. a
27. b
28. b
29. c
30. a
31. a
32. b
33. a
34. a
35. b
36. a
37. a
38. b
39.
40. a
41. d
42. b
43. b
44. a
45. c
46. b
47. b
48. a